



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,724	10/28/2003	Eric Frayssinet	15675P314CX	5542

8791 7590 02/24/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN  
12400 WILSHIRE BOULEVARD  
SEVENTH FLOOR  
LOS ANGELES, CA 90025-1030

EXAMINER

LEE, HSIEN MING

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/695,724	Applicant(s) FRAYSSINET ET AL.	
	Examiner Hsien-ming Lee	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 1-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/530,050.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

HSIEN-MING LI  
PRIMARY EXAMINER

*Lee*  
*2/22/2005*

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>122403</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 3, 5-10 are objected to because of the following informalities: in-consistent term.

In claim 1, at line 6, changing "gallium nitride" into – **continuous** gallium nitride –; and at line 8, changing "gallium nitride" into – **continuous** gallium nitride **layer** – are suggested.

In claim 3 (line 1), claim 8 (line 1), claim 9 (line 4), changing "silicon nitride layer" into – silicon nitride **film** – is suggested.

In claim 5, claim 6 (line 3), claim 9 (line 3), changing "gallium nitride layer" into – **continuous** gallium nitride layer – is suggested.

In claim 7 and claim 9 (line 4), the term "the carrier gas" lacks antecedent basis.

In claim 10, at line 2, changing "consisting in" into – consistent **of** – is suggested.

### *Specification*

2. The disclosure is objected to because of the following informalities: typographical error.

On page 12, paragraph [0055], at line 7, changing "(Fig.2" into – (Fig.2) – is suggested.

Appropriate correction is required.

### *Allowable Subject Matter*

3. Claim 1 would be allowable if rewritten or amended to overcome the objection, set forth in this Office action.

4. Claims 3 and 5-10 would be allowable if rewritten to overcome the objection, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

5. Claims 2, 4, and 11-20 are objected to as being dependent upon an objected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Letertre et al. to US 6,794,276 teach forming a silicon nitride film 10/11 on a substrate 12 ; forming a seed layer of monocrystalline gallium nitride 2 and forming a working layer of gallium nitride 16, which is formed by CVD or MBE or hydride vapor phase epitaxy (HVPE) ( Fig.2 and col. 7, lines 1-40).

Urashima et al. to US 6,852,161 teach forming a silicon nitride film 5 (i.e. a mask layer) at a temperature at least 1000 °C (col. 18, lines 20-21 and 45-48 and Fig.9(b)) on a substrate 1; forming a gallium nitride 8 on an exposed portion of the substrate 1 (Fig.9(d)) and after forming the silicon nitride (i.e. mask layer) 5 reducing the substrate temperature to 1180 °C and providing TMG vapor to form gallium nitride layer 9 on the silicon nitride 5 (Fig.9(g) and col. 44, lines 47-53).

In contrast, the prior art of record neither teaches nor suggests depositing a silicon nitride film of between *5 to 20 monolayers*; depositing a *continuous gallium* nitride on the silicon nitride at a temperature ranging from *400 to 600 °C*; and *annealing* the gallium nitride layer at a temperature ranging from *950 to 1120 °C*; and performing an *epitaxial regrowth* with the gallium nitride layer *at the end* of a *spontaneous in situ* formation of islands of gallium nitride.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (8:00 ~ 6:00).

Art Unit: 2823

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Feb 22, 2005

Hsien-ming Lee  
Primary Examiner  
Art Unit 2823

HSIEN-MING LEE  
PRIMARY EXAMINER

*2/22/2005*